there given (1452° and 1755°) have since been almost universally accepted. Also, in view of the thorough work of Prof. Callendar on the specific heat of water, it is somewhat surprising to find that the values given are "the mean of various determinations, including Calendar and Blonsfield, 1912"; one frequently observes that the names of observers are misspelt as in this quotation.

It is hoped that before the next edition is issued the various sections will be submitted to expert scrutiny, for the value of the book would be greatly enhanced if the user could feel sure that the most trustworthy data are quoted. E. Griffiths.

Our Bookshelf.

Illustrations of the Flowering Plants and Ferns of the Falkland Islands. By Mrs. E. F. Vallentin. With descriptions by Mrs. E. M. Cotton. Pp. xii + 64 plates + text + ii. (London: L. Reeve and Co., Ltd., 1921.) 84*s.* net.

Since the publication of Sir J. D. Hooker's "Flora Antarctica" much progress has been made in the study of the Falkland flora and from a taxonomic standpoint it may now be said to be well known. Nevertheless, a well-illustrated compact flora has been a desideratum and it is thus additionally unfortunate that owing to a serious breakdown in health the completion of Mrs. Vallentin's work has been indefinitely postponed. The volume now under notice contains 64 plates illustrating in colour, and with excellent dissections, many of the most characteristic Falkland plants. Each plate is accompanied by a short description of the family, genus and species. It seems a pity that with the space available fuller descriptions and more detailed ecological notes have not been provided. The repetition of the description of the family appears to be unnecessary; thus the same diagnosis of the Compositæ is repeated eleven times.

The work as a whole illustrates many of the essential features of the Falkland Islands flora. The predominance of dwarf herbaceous and subshrubby perennials, especially characteristic of steppe and heath formations, is emphasised both by the plants chosen for illustration and by the small number of therophytes and the absence of phanerophytes, except for a few nanophanerophytes.

We have no doubt that this work will prove most useful to inhabitants of the Falkland Islands who take an interest in the natural history of their country by enabling them to identify easily many of the common plants around them, and that it will also be used in a more general manner by workers in systematic and geographical botany in other countries.

W. B. Turrill.

The Microscope: Its Design, Construction and Applications. A Symposium and General Discussion by many Authorities. Edited by F. S. Spiers. Pp. v + 260 + plates. (London: Charles Griffin and Co., Ltd., 1920.) Price 21*s.* net.

The addresses and papers given in 1920 at the conjoined meeting of the Faraday, Royal Microscopical, Optical and Photomicrographic Societies and Technical Optics Committee of the British Science Guild are gathered together conveniently in the volume under notice. All the papers are by specialists in their respective branches and the whole constitutes a valuable contribution to microscopical science. The President, Sir Robert Hadfield, in his introductory address traced the history of the development of the microscope, and papers on the earliest steps in the invention of the microscope and on the history and design of photomicrographic apparatus are contributed by Dr. Singer and Mr. Martin Duncan respectively. The future of the microscope is dealt with in suggestive papers by Mr. Barnard and Mr. Schneider, while Profs. Cheshire, Conrady and Porter discuss the mechanical design and optics of the instrument. Many experts in their particular subjects give practical details on the application of the microscope in fermentation industries, in petrology, metallurgy, engineering and metrology. Methods of illumination, the testing of objectives, and optical glass and its manufacture are other subjects dealt with. In addition to the papers themselves, a summary of the discussions following their reading is included and the volume is illustrated with many plates and figures. The work, which has been ably edited by Mr. Spiers of the Faraday Society, is indispensable to any one desiring to follow the trend of the modern developments of the microscope and of microscopical science. R. T. H.

Introduction to the Study of Minerals and Guide to the Mineral Collections in Kelvingrove Museum. By Prof. P. MacNair. Second edition. Pp. viii + 94 + 1 plate. (Glasgow: Hay Nisbet and Co., Ltd., 1921.) 1*s.*

Prof. MacNair is to be congratulated on having introduced many improvements in the second edition of his useful guide-book. The figures illustrating the crystal-forms are much more accurate than those published in the first edition, though there are still a few which should have been replaced. The part dealing with crystallography has been much increased and the systems have been subdivided into groups, the introduction of which in place of the classes of the accepted systems of crystallography is rather confusing.

The guide includes a clear account of the optical and other properties of minerals, a description of some of the commoner species, a glossary of terms, and a list of species in the collection. The book is based very much on the lines of Fletcher's "An Introduction to the Study of Minerals," of which the fifteenth edition is still used as the guide to the Mineral Department of the British Museum (Natural History). It will be noted that Prof. MacNair in Glasgow has produced his book at sixpence less than the price of the British Museum Guide.

The Secrets of the Self. (Asrár-I Khudi.) A Philosophical Poem. By Sheikh Muhammad Iqbal. Translated from the Original Persian with Introduction and Notes by Dr. R. A. Nicholson. Pp. xxxi + 147. (London: Macmillan and Co., Ltd., 1920.) Price 7*s.* 6*d.* net.

This poem has an interest beyond that of its artistic form or æsthetic content, for it reveals the effect on the oriental mind of contact with the culture and philo-

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sophy of the West. The writer is a firm and devout believer in Mahomet. He has studied Bradley and Bergson, he has taken degrees at Cambridge and at Munich, and he has returned to Persia, more ardent than ever in the vision of a world-triumphant religion, an Islamic kingdom of God on earth.

Proceedings of the Aristotelian Society. New Series—vol. xxi. Containing the papers read before the Society during the Forty-second Session, 1920–1921. Pp. iv.+246. (London: Williams and Norgate, 1921.) 25*s*. net.

ALTHOUGH the papers in this volume are philosophical in the technical meaning, several of them are of unusual scientific interest, and all of them show how the results of pure scientific research are influencing philosophical speculation.

Prof. Montague's paper on "Variation, Heredity and Consciousness" is described as a mechanist answer to the vitalist challenge. It develops an ingenious theory according to which it is possible to trace the transformation of the potential energy acquired by the brain, through the kinetic energies of sensory nerve currents, into all the phenomena of mind and consciousness. In the whole process no factor is admitted which is not definable in purely physical terms. The Dean of St. Paul's in his Presidential address "Is the time series reversible?" finds it impossible to keep out Einstein and the principle of relativity. Miss Oakeley gives an excellent critical account of the recent work of Prof. Driesch in "Philosophy of Life and Knowledge." Prof. Boodin in a paper on "Cosmic Evolution" deals with the new theories of the origin and evolution of life of the American biologists, Osborn, Willard Gibbs and Henderson. Dr. Dorothy Wrinch's paper "On the Structures of Scientific Inquiry" is abundantly illustrated with examples from modern research in mathematics and physics.

Tables of Refractive Indices. Vol. xi. *Oils, Fats and Waxes.* Compiled by R. Kanthack. Edited by Dr. J. N. Goldsmith. Pp. 295. (London: Adam Hilger, Ltd., 1921.) 25*s*. net.

IT is satisfactory to find a British firm of scientific instrument-makers not content with manufacturing instruments but, in addition, providing facilities for the compilation and publication of data which will facilitate the use, and incidentally lead to the extended employment of their manufactures. Mr. Kanthack has done his work well, and no one who uses his tables is likely to complain that oils of any importance have been omitted or that the figures quoted are badly selected from those available.

The names of the oils are arranged alphabetically, both native names and scientific names of the sources being given. Wherever possible the constants are quoted beside the native names and cross-references placed against the scientific names. This has two disadvantages: native names are variable, being usually merely attempts at phonetic renderings of native pronunciations and they also vary with the country of origin. Further, the method of arrangement fails to bring together oils which are similar in character, a matter of some importance for convenience of reference. It would be difficult if not impossible to devise an arrangement to obviate these disadvantages entirely, but it would probably improve matters somewhat if the scientific names of the sources of the oils were made the backbone of the arrangement and the native names given in a separate glossary.

The value of the tables to the analyst is enhanced by the inclusion, in separate appendices, of refraction constants for glycerol, glycerides and fatty acids, and "hardened" and polymerised oils, with approximate temperature corrections and factors for the inter-conversion of refractive indices and butter refractometer readings. There is also an extensive bibliography.

T. A. H.

The Distribution of Vegetation in the United States as related to Climatic Conditions. By B. E. Livingston and E. Shreve. (Publication No. 284.) Pp. xvi+590+plates. (Washington: Carnegie Institution). 9 dollars.

THE development of ecology has been much stimulated in recent years by the detailed and exact work of American botanists. The book under notice forms in many respects a companion volume to that of Clements on "Plant Succession." Essentially it deals with the delimitation of vegetational areas in the United States and the relation of these to environmental conditions. Prof. Livingston is well-known for his work in plant physiology, as well as in ecological plant-geography, and Dr. Shreve is also a physiological ecologist. So this aspect naturally dominates in their joint work.

The introduction and the first portion of Part II., dealing with environmental conditions, will be read with interest by all ecologists and physiologists since they contain much useful general information and new standpoints for the survey of old questions. That portion of the book which deals directly with American vegetation shows clear indications of an enormous amount of detailed work. The abstraction and preparation of figures and tables illustrating the very varied climatic conditions of the United States and their correlation with vegetational areas must have necessitated much concentrated labour, and co-nationals of the authors will owe a debt of gratitude to them for the results. Numerous outline maps are reproduced to show graphically the distribution of climatic conditions, vegetational types, and even occasionally of single species. One coloured map showing the vegetational areas of the United States, and another the life-zones, accompany the volume, which is also provided with a table of contents but no index.

W. B. T.

Modern Motor Car Practice. Edited by W. H. Berry. (Oxford Technical Publications.) Pp. xii+582. (London: Henry Frowde and Hodder and Stoughton, 1921.) 31*s*. 6*d*. net.

A LARGE amount of information regarding the details of motor cars and their working in practice will be found in this volume. As a rule, each principal detail, such as clutch, steering gear, etc., forms the subject of a separate chapter. Different designs are discussed and their defects and advantages indicated. The book

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